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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/931,124	08/16/2001	Takahiko Kishi	678-724 (P9876)	3618

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EXAMINER

ZHENG, EVA Y

ART UNIT PAPER NUMBER

2634

DATE MAILED: 11/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/931,124

Applicant(s)

KISHI, TAKAHIKO

Examiner

Eva Yi Zheng

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figure 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. 35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph.

On page 9, L 10-20, specification disclose an image frequency output from a first mixer 201, and an IF filter 305 suppress the image frequency. Since the first mixer 201 is in block 307, which is located after block 305 and ADC 306 of Fig. 2, it is confusing how does the filter 305 suppress the image frequency 201.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 5-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 5, line 13-20, recitation: " a filterof the first mixer.....and, an analog-to-digital converter for sampling an output of the filter....." is confusing since the first mixer (201 in Fig. 1 is a component of 307 in Fig. 2) can not be an input to an analog-to-digital converter (306 in Fig. 2) according to drawings. Therefore, it is unclear and confusing for which mixer and filter is referred to.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Shen et al. (US 5,640,698).

a) Regarding claim 1, Shen et al. disclose a digital down-converter for converting a frequency of a signal, received at a radio receiver and sampled with a radio frequency (RF) or an intermediated frequency (IF), to a detection frequency for a detection process, comprising:

a first mixer (block 19 in Fig. 1) for converting a frequency of the received signal to a frequency of a first IF signal (Col 1, L 28-31); and

a second mixer (block 25 in Fig. 1) for converting the first IF signal converted by the first mixer to a second IF signal of the detection frequency, and outputting the second IF signal as a complexed signal (inherent as baseband signal; Col 1, L 28-44).

b) Regarding claim 5, Shen et al. disclose a receiver comprising:

a digital down-converter including a first mixer (block 19 in Fig. 1) for converting a frequency of the received signal, sampled with a radio frequency (RF) or an intermediate frequency (IF), to a frequency of a first IF signal (Col 1, L 28-31), and a second mixer (block 25 in Fig. 1) for converting the first IF signal converted by the first mixer to a second IF signal of the detection frequency for a detection process and then outputting the second IF signal as a complexed signal (inherent as baseband signal; Col 1, L 28-44).

A radio receiver (11 in fig. 1) for receiving an input signal and providing the received signal to the digital down-converter for frequency conversion;

A filter (41 in Fig.2) for attenuating an aliasing frequency component and an image frequency component of the first mixer in the digital down-converter, from an output of the radio receiver; and

An analog-to-digital converter (51 in Fig. 2) for sampling an output of the filter with a radio frequency or an intermediate frequency and providing the sampled signal to the digital down-converter.

7. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Wormington et al (US 6,297,764 B1).

a) Regarding claim 1, Wormington et al. disclose a digital down-converter for converting a frequency of a signal, received at a radio receiver and sampled with a radio frequency (RF) or an intermediated frequency (IF), to a detection frequency for a detection process, comprising:

a first mixer (block 72 in Fig. 5) for converting a frequency of the received signal to a frequency of a first IF signal (Col 5, L 2-5); and

a second mixer (block 80 in Fig. 5) for converting the first IF signal converted by the first mixer to a second IF signal of the detection frequency, and outputting the second IF signal as a complexed signal (Col 5, L 6-10).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 2, 3, 4, 6, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shen et al. in view of Ostman (US 6,061,385).

a) Regarding claims 2 and 6, Shen et al. disclose all of the subject matter described above except for the specific teaching of a frequency of the first IF signal is $\frac{1}{4}$ a sampling frequency.

Ostman, in same field of endeavor, teaches a received frequency modulated signal as shown in Fig. 1, where the intermediated frequency is a quarter of the sampling frequency (Col 4, L28-36).

To avoid complexity and extreme power consumption of the circuitry a well known method is to select the intermediate frequency to be a quarter of the sampling frequency (Ostman, Col 4, L28-35). Therefore, it is obvious to one of ordinary skill in the art to implement quarter sampling method taught by Ostman in the frequency down conversion system by Shen et al. In doing so, reduce power consumption, reduce cost, and simplify communication system design.

b) Regarding claims 3 and 7, Shen et al. disclose all of the subject matter described above except for the specific teaching of an automatic gain control (AGC) for amplifying an output of the first mixer.

Ostman, in same field of endeavor, teaches a received frequency modulated signal as shown in Fig. 4, where AGC has to be equipped in a liner receiver (Col 7, L47-56).

A linear arrangement requires more power than other corresponding arrangements, and a linear receiver must al be equipped with AGC in order to provide a

sufficient dynamic range (Col 7, L49-52). Therefore, it is obvious to one of ordinary skill in the art to implement a AGC taught by Ostman in the frequency down conversion system by Shen et al. In doing so, have better frequency control and provide a dynamic range for the linear system.

c) Regarding claims 4 and 8, Shen et al. disclose the second mixer is constructed in a polyphase structure comprised of a decimation filter (inherent as anti-aliasing filter in block of Fig. 4, also shown in Fig. 5), and a quadrature converter (though not shown in drawings inherent as baseband signal, Col 1, L 28-44).

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eva Yi Zheng whose telephone number is (571) 272-3049. The examiner can normally be reached on 7:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571) 272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-879-9306.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Art Unit: 2634

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Eva Yi Zheng
Examiner
Art Unit 2634

November 22, 2004

A handwritten signature in black ink, appearing to read "Shuwang Liu".

SHUWANG LIU
PRIMARY EXAMINER